IN THE CLAIMS

1. (Currently amended) An arrangement for iterative channel impulse response estimation in a system employing a transmission channel, comprising:

a channel impulse response estimator ~~(310)~~ for producing iteratively from a received signal (y) a channel impulse response estimate signal ($\hat{\underline{p}}$); and

a noise estimator ~~(320)~~ for producing from the received signal (y) a noise estimate signal,

wherein said noise estimate signal comprises a matrix (W) representing the inverse of noise covariance, and

said channel impulse response estimator is arranged, at each iteration (K), to ~~iteratively~~ respond to said matrix (W) to ~~iteratively~~ produce ~~an~~ a single improved channel impulse response estimate signal ($\hat{\underline{p}}$).

2. (Previously presented) The arrangement of claim 1 wherein said matrix (W) representing the inverse of noise covariance is calculated at each iteration.

3. (Previously presented) The arrangement of claim 1 wherein said matrix (W) representing the inverse of noise covariance is selected from predetermined values corresponding to statistics of expected noise.

4. (Previously presented) The arrangement of claim 2 or 3 wherein the channel impulse response estimate signal ($\hat{\underline{p}}$) is represented by:

$$(H^H \cdot W \cdot H)^{-1} \cdot H^H \cdot W \cdot \underline{y},$$

where H represents a matrix depending on known symbols, $\underline{y}$ represents a vector of received channel samples, and W represents the inverse noise covariance matrix.

5. (Previously presented) The arrangement of claim 4 when dependent on claim 3 wherein the predetermined values corresponding to statistics of expected noise are selected according to the noise types: Gaussian, upper adjacent interferer, lower adjacent interferer, or co-channel interferer.

6. (Currently amended) The arrangement of claim 1 wherein the channel impulse response estimator ~~(310)~~ is arranged to produce the channel impulse response estimate signal ($\underline{\hat{p}}$) as a weighted least square function.

7. (Previously presented) The arrangement of claim 1 wherein the system is a wireless communication system.

8. (Previously presented) The arrangement of claim 7 wherein the system is a GSM system.

9. (Previously presented) The arrangement of claim 8 wherein the system is an EDGE system.

10. (Previously presented) A receiver for use in a system employing a transmission channel, the receiver comprising the arrangement of claim 1.

11. (Currently amended) A method, for iterative channel impulse response estimation in a system employing a transmission channel, comprising:

providing a channel impulse response estimator ~~(310)~~ for producing <u>iteratively</u> from a received signal (y) a channel impulse response estimate signal ($\underline{\hat{p}}$); and

providing a noise estimator ~~(320)~~ for producing from the received signal (y) a noise estimate signal,

wherein said noise estimate signal comprises a matrix (W) representing the inverse of noise covariance, and

said channel impulse response estimator, at each iteration (K), ~~(310) iteratively~~ responds to said matrix (W) to ~~iteratively~~ produce ~~an~~ a single improved channel impulse response estimate signal ($\underline{\hat{p}}$).

12. (Previously presented) The method of claim 11 wherein said matrix (W) representing the inverse of noise covariance is calculated at each iteration.

13. (Previously presented) The method of claim 11 wherein said matrix (W) representing the inverse of noise covariance is selected from predetermined values corresponding to statistics of expected noise.

14. (Previously presented) The method of claim 12 or 13 wherein the channel impulse response estimate signal ($\underline{\hat{p}}$) is represented by:

$$(H^H \cdot W \cdot H)^{-1} \cdot H^H \cdot W \cdot \underline{y},$$

where H represents a matrix depending on known symbols, $\underline{y}$ represents a vector of received channel samples, and W represents the inverse noise covariance matrix.

15. (Previously presented) The arrangement of claim 14 when dependent on claim 13 wherein the predetermined values corresponding to statistics of expected noise are selected according to the noise types: Gaussian, upper adjacent interferer, lower adjacent interferer, or co-channel interferer.

16. (Currently amended) The method of claim 11 wherein the channel impulse response estimator ~~(310)~~ produces the channel impulse response estimate signal ($\underline{\hat{p}}$) as a weighted least square function.

17. (Previously presented) The method of claim 11 wherein the system is a wireless communication system.

18. (Previously presented) The method of claim 17 wherein the system is a GSM system.

19. (Previously presented) The method of claim 17 wherein the system is an EDGE system.

20. (Currently amended) A computer readable medium embodying a computer program element, ~~comprising~~ the computer program ~~means~~ element comprising instructions for performing ~~the~~ a method ~~of claim 11~~ for iterative channel impulse response estimation in a system employing a transmission channel, the method comprising:

providing a channel impulse response estimator for producing iteratively from a received signal (y) a channel impulse response estimate signal ($\hat{\underline{p}}$); and

providing a noise estimator for producing from the received signal (y) a noise estimate signal,

wherein said noise estimate signal comprises a matrix (W) representing the inverse of noise covariance, and

said channel impulse response estimator, at each iteration (K), responds to said matrix (W) to produce a single improved channel impulse response estimate signal ($\hat{\underline{p}}$).